

Moisture Meter Instruction Manual

for Wagner Models:

- MMC 205
- MMC 210
- MMC 220



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Introduction

Congratulations!

You have purchased one of the most accurate moisture measurement instruments for wood in the world. Using patented electromagnetic wave technology, Wagner hand-held meters have been proven by universities and institutes worldwide to provide superior measurement results.

Utilizing an electro-magnetic field, your Wagner moisture meter measures a relatively large cross-sectional area each time you take a reading, giving you a far better representation than other technologies of the true moisture content of your wood. Pin-type meters do not provide this, only measuring a very small area, and only at a particular depth. Very short, non-insulated pins are especially prone to just reading the surface of your wood.

Introduction Continued. . .

Your Wagner meter measures the moisture content in a 1^{1/2} inch wide by 2^{1/2} inch long by ³/₄ inch thick area of your wood. This closely approximates the full-thickness cross-section method used when performing the ASTM D 4442-92 Oven Dry lab test for determining moisture content in wood. This ASTM standard (and its international counterparts) is the standard to which all moisture meters for wood are compared for accuracy. Wagner technology has been proven in many studies to provide some of the most accurate results in the industry when compared to this worldwide standard.

The Wagner MMC-200 Series Moisture Meters utilize the latest design features available in moisture measurement technology. They are designed to fit comfortably in a jacket pocket or toolbox, and are ideal for anyone who needs a professional quality tool to inspect wood or

wood products for accurate moisture content. They are popular with flooring installers, woodworkers, cabinet and furniture makers, contractors, and quality assurance inspectors.

Other important features of Wagner hand-held meters include:

- The "Wood-Friendly"TM MMC-200 series meters use advanced electromagnetic wave technology to accurately measure wood moisture content* to a depth of $\frac{3}{4}$ inch. The MMC-205 can read values from 5% to 20%, while the MMC-210 can read 5% to 30%. The MMC-220 can read 5% to 30% at settings up to .80 SG. Note: If the MMC220 species setting value selected is more than 80, the maximum moisture content reading attainable will be lower than 30%.

Introduction Continued. . .

- Useful for inspections on many types of materials, including solid and laminated wood products.
- Selectable wood species setting eliminates complicated and time consuming wood species adjustment corrections.
- Easy to read digital display read-out scaled in 0.1% increments (1.0% for the MMC-205).
- Virtually unaffected by wood temperature or surface moisture. **

*Confirmed in university study—
information available upon request.

**Contact Wagner technical support for
guidelines when wood is frozen.

Operational Instructions—MMC 205



On/Off/Species Button:

When the meter is Off, momentarily pressing and releasing this button will cause the meter to turn On, and briefly display the firmware version, then enter Measurement mode. When the meter is in Measurement mode, and the button is momentarily pressed and released, it will display the species setting value. Press and release the button again to return to Measurement mode.

To turn Off the meter from Measurement mode only, press the On/Off/Species button for 3 seconds and then release. The meter will also turn itself off automatically when not in use as described in the auto-shutdown section.

MMC 205 Instructions Continued. . .

Species Setting:

The species setting can be changed to compensate for a variety of wood species. When measuring another species other than the factory default setting of 0.50 Specific Gravity (SG), the species setting needs to be changed. Refer to the Species Setting Tables included with your meter to locate the correct species setting for your wood. If your species setting is not listed, refer to the “Species Corrections” portion of this manual. The values entered into the MMC-205 meter omit the decimal point, so for example the Douglas Fir value of 0.50 would be “50” when programming the Species Setting Value.

When the meter is in Measurement mode, momentarily pressing and releasing the On/Off/Species button will cause the display to show the current specific gravity setting. Press the button a second time for 3 seconds

and release to enter CHANGE SPECIES MODE, or momentarily press and release the button to return to Measurement mode.

When CHANGE SPECIES MODE has been selected, a blinking colon symbol (:) will appear on the display. Momentarily pressing the On/Off/Species button again will increment the selected specific gravity value by 01. The value will go as high as 70, then will wrap around to 30 and continue incrementing. When the desired setting has been reached, press button for 3 seconds and release to store the value and return to Measurement mode.

Your commonly used species setting values can be written on the meter overlay decal in the space provided using a pencil or non-permanent marker, and erased with a swab dipped in isopropyl alcohol. Avoid using a permanent marker because staining of the decal may occur.

Operational Instructions—MMC 210

On/Hold



On/Hold Button:

When the meter is Off, momentarily pressing and releasing this button will cause the meter to turn On, and briefly display the firmware version, then enter Measurement mode.

When the meter is in Measurement mode, and the On/Hold button is momentarily pressed and released, it will enter Hold mode to allow the user to “freeze” the moisture content reading. Hold mode is selected when the symbol (\div) appears in the left corner of the display. This is ideal for keeping a moisture reading on the display when you are taking moisture readings in hard-to-reach places. The reading will be “frozen” on the display until you press and release the On/Hold button again.

To turn Off the meter, press the On/Hold button for 3 seconds. The meter will also turn itself off automatically when not in use as described in the auto-shutdown section.

Species



Species Button:

The species setting can be changed to compensate for a variety of wood species. When measuring another species other than the factory default setting of 0.50 Specific Gravity (SG), the species setting needs to be changed. Refer to the Species Setting Tables included with your meter to locate the correct species setting for your wood. If your species setting is not listed, refer to the “Species Corrections” portion of this manual. The values entered into the MMC-210 meter omit the decimal point, so for example the Douglas Fir value of 0.50 would be “50” when programming the Species Setting Value.

MMC 210 Instructions Continued. . .

When the meter is in Measurement mode, momentarily pressing and releasing the species button will cause the display to show the current specific gravity setting. Momentarily press and release the button a second time to enter CHANGE SPECIES MODE, or momentarily press and release the On/Hold button to return to Measurement mode.

When CHANGE SPECIES MODE has been selected, a blinking colon symbol (:) will appear near the left side of the display. Pressing the SPECIES button again will increment the selected specific gravity value by 01, or hold the button down to increment by 10. The value will go as high as 70, then will wrap around to 30 and continue incrementing. When the desired setting has been reached, press the On/Hold button to store the species setting value and return to Measurement mode.

Your commonly used species setting values can be written on the meter overlay decal in the spaces provided using a pencil or non-permanent marker, and erased with a swab dipped in isopropyl alcohol. Avoid using a permanent marker because staining of the decal may occur.

Operational Instructions — MMC 220

On/Hold



On/Hold Button:

When the meter is Off, momentarily pressing and releasing this button will cause the meter to turn On, and briefly display the firmware version, then enter Measurement mode.

When the meter is in Measurement mode, and the On/Hold button is momentarily pressed and released, it will enter Hold mode to allow the user to “freeze” the moisture content reading. Hold mode is

MMC 220 Instructions Continued. . .

selected when the symbol (\div) appears in the left corner of the display. This is ideal for keeping a moisture reading on the display when you are taking moisture readings in hard-to-reach places. The reading will be “frozen” on the display until you press and release the On/Hold button again.

To turn Off the meter, press the On/Hold button for 3 seconds, and then release. The meter will also turn itself off automatically when not in use as described in the auto-shutdown section.

Species



Species Button:

The species setting can be changed to compensate for a variety of wood species. When measuring another species other than the factory default setting of 0.50 Specific Gravity (SG), the species

setting needs to be changed. Refer to the Species Setting Tables included with your meter to locate the correct species setting for your wood. If your species is not listed, refer to the “Species Corrections” portion of this manual. The values entered into the MMC-220 meter omit the decimal point, so for example the Douglas Fir value of 0.50 would be “50” when programming the Species Setting Value.

When the meter is in Measurement mode, momentarily pressing and releasing the species button will cause the display to show the current specific gravity setting. Momentarily press and release the button a second time to enter CHANGE SPECIES MODE, or momentarily press and release the On/Hold button to return to Measurement Mode.

MMC 220 Instructions Continued. . .

When CHANGE SPECIES MODE has been selected, a blinking colon symbol (:) will appear near the left side of the display. Pressing the Species button again will increment the selected specific gravity value by 01, or hold the button down to increment by 10. The value will go as high as 100, then will wrap around to 20 and continue incrementing. When the desired setting has been reached, press the On/Hold button to store the species setting value and return to Measurement mode.

NOTE: If the species setting value selected is more than 80, the maximum moisture content reading attainable will be lower than 30%.

Your commonly used species setting values can be written on the meter overlay decal in the space provided using a pencil or non-permanent marker, and erased with a swab dipped in isopropyl alcohol. Avoid using a permanent marker because staining of the decal may occur.

Taking Measurements

In order to take correct moisture content measurements, ensure that the meter's specific gravity (species) setting is the right one for your species of wood as listed in the Species Setting Tables.*



Be sure to press down firmly on the center of the meter with approximately 3 pounds

Taking Measurements continued. . .

of force to ensure good sensor plate contact with the wood surface. This is especially important on rough-sawn lumber. Do not take readings where there is a noticeable defect or knot in the lumber.

If there is visible surface moisture or water, wipe off any excess, and let the surface of the wood dry-out for a couple of minutes, then take the reading. If possible, turn the board over and measure the other side. If the thickness of the piece is greater than 1½ inches, it is a good idea to take measurements on both sides.

If the lumber thickness is less than the scan depth of the meter, an air gap of at least one inch needs to be maintained underneath the wood to prevent erroneous high readings. Ensure that there is nothing (including your hand) under the material you are measuring, especially any metal. The actual moisture

sensing area is a 1½ inch by 2½ inch rectangle on the meter's backside (opposite side of the display and keypad). In order to take a valid measurement, this sensing area must be completely covered with the wood or other material you are measuring. If the sensing area is not completely covered, your moisture reading will be inaccurate.

Additional meter corrections may be necessary if you are measuring Raft Wood (salt water permeated), or lumber treated with Copper, Chrome, Arsenic (CCA), or Ammonical, Copper, Quantenary (ACQ).**

*Refer to the Species Setting Tables in the supplemental manual provided.

**Contact Wagner Technical Services for further information for these applications.

Features (All 200 Series Meters)

Auto-Shutdown:

The meter will automatically shutdown in 60 seconds when the meter's moisture content reading has not changed by more than 2%, and none of the meter buttons have been pressed. The shutdown timer will reset anytime the meter reading changes or a button has been pressed.

Low Battery Indicator:

If the meter is On, and battery voltage is low, the LO BAT indicator will be shown on the left side of the display. When the LO BAT indicator is on, you must replace the battery or the meter may not function properly. If the battery needs to be replaced, use either a 9-volt alkaline or a ni-cad rechargeable. Be sure to observe proper battery polarity.

Meter Storage

For a long service life, it is important to store your meter properly. Avoid excessively hot or cold locations, and keep the meter in the case provided. Do not store the meter in an area with excessive electro-magnetic interference, such as near an electric motor, or where it could be crushed, such as in front of a forklift. Do not leave the meter in an operating kiln during the drying cycle.

Meter Calibration

The meter has been calibrated at the factory and should not require re-calibration. If you need to have the calibration verified, please contact the Wagner Electronics Sales Department to purchase a calibration verification block if you don't already have one. Should the meter need to have a calibration adjustment, it will need to be returned to Wagner Technical Services Department.

MMC-200 Series Meter Specifications

Size:

Length: 4 $\frac{9}{16}$ inches

Width: 2 $\frac{3}{4}$ inches

Height: 1 $\frac{1}{16}$ inches

Scanning Area:

Length 2 $\frac{1}{2}$ inches

Width 1 $\frac{1}{2}$ inches

Scanning Depth:

$\frac{3}{4}$ inch

Weight: 0.37 pounds

Power: 9 volt alkaline or ni-cad
rechargeable

Auto Power Shut Down:

60 seconds

Measurement Ranges:

(MMC-205):

5% - 20% MC scaled in 1% increments

(MMC-210):

5% - 30% MC scaled in 0.1% increments

(MMC-220):

5% - 30% MC scaled in 0.1% increments
(up to .80 SG)

Note:

If the MMC 220 species setting value selected is more than 80, the maximum moisture content reading attainable will be lower than 30%.

Density (SG) Range (MMC-205):

0.30 to 0.70 SG

Density (SG) Range (MMC-210):

0.30 to 0.70 SG

Density (SG) Range (MMC-220):

0.20 to 1.00 SG

Operating Temperature:

30 to 110 degrees Fahrenheit

FCC Compliance Statement

This equipment has been tested and found to comply within the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installations.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Move the equipment away from the receiver.
- Plug the equipment into an outlet on a circuit different from that to which the receiver is powered.
- If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

CAUTION: Only equipment certified to comply with Class B (computer input/output devices, terminals, printers, etc.) should be attached to this equipment. Finally, any changes or modifications to the equipment by the user not expressly approved by the grantee or manufacture could void the user's authority to operate such equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

**Canadian Department of Communications
compliance statement**

This equipment does not exceed class B limits per radio noise emissions for digital apparatus, set out in the Radio Interference Regulation of the Canadian Department of communications. Operation in a residential area may cause unacceptable interference to radio and TV reception, requiring the owner or operator to take whatever steps are necessary to correct the interference.

**Avis de conformité aux normes du ministère des
Communications du Canada**

Cet équipement ne dépasse pas les limites de Classe B d'émission de bruits radioélectriques pour les appareils numériques, telles que prescrites par le Règlement sur le brouillage radioélectrique établi par le ministère des Communications du Canada. L'exploitation faite en milieu résidentiel peut entraîner le brouillage des réceptions radio et télé, ce qui obligerait le propriétaire ou l'opérateur à prendre les dispositions nécessaires pour en éliminer les causes.

Warranty

Wagner Electronic Products, Inc., warrants this product against defects in material and workmanship for one (1) year from the date of purchase, subject to the following terms and conditions:

Wagner's liability under this warranty shall be limited, at Wagner's option, to the repair or replacement of this product or any part thereof, which is demonstrated to be defective. To exercise this warranty, customer must telephone, fax or e-mail Wagner's Customer Service Department for an RMA (Return Materials Authorization) number and factory instructions for shipment. This limited warranty does not apply if the product has been damaged by accident, negligent handling, misuse, alteration, damage during shipment, or improper service. Wagner Electronic Products, Inc., shall in no event be liable for any breach of warranty or defect in this product, which exceeds the amount of purchase price of the product. Wagner Electronic Products, Inc., shall not be liable for incidental or consequential damages for the breach of any express or implied warranty with respect to this product or its calibration.

With proper care and maintenance, the meter should stay in calibration; however, because Wagner

Electronic Products, Inc., has no control over the manner in which the unit will be used, it makes no warranty that the meter will stay in calibration for any specific period of time. Wagner Electronic Products, Inc., recommends returning the unit to the factory for a diagnostic checkup and recalibration in the event the meter is dropped or otherwise damaged, or the meter accuracy is suspect.

This warranty is in lieu of all other warranties, whether oral or written, express or implied. Any implied warranties, including implied warranties of merchantability and fitness for a particular purpose, are excluded. Agents and employees of Wagner Electronic Products, Inc., are not authorized to make modifications to this warranty or additional warranties binding on Wagner Electronic Products, Inc. Accordingly, additional statements, whether oral or written, except written statements from an officer of Wagner Electronic Products, Inc., do not constitute warranties and should not be relied upon by the customer.

This warranty is personal to the customer purchasing the product from Wagner Electronic Products, Inc., and is not transferable.

Repair Service

In the event of damage, failure, or if the unit requires re-calibration, contact the Wagner Electronics Technical Services Department for an RMA number prior to returning it for repair.



Wagner Electronic Products, Inc.

326 Pine Grove Road,

Rogue River, OR 97537 USA

Phone: (541) 582-0541

Fax: (541) 582-4138

E-mail: sales@www.wagner.com

Visit Our Moisture Measuring Information Center at:
www.moisturemeters.com